

THE HISTORY OF THE VEGETATION AND  
CLIMATE IN SOUTHERN TASMANIA SINCE  
THE LATE PLEISTOCENE  
(ca. 13.000 - 0 BP)

by

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**VOLUME TWO**  
**APPENDICES, BIBLIOGRAPHY,**  
**MAPS, FIGURES AND SUPPORTING**  
**PAPERS**

APPENDIX 1.CONTEMPORARY ACCOUNT OF THE APPARENT EFFECTS OF  
"THE GREAT FROST" OF 1837.

"The road to Marlborough passes across the southern edge of this valley; it is then directed through a succession of forests and beautiful little marshes (amongst the latter are the Duck and Boggy Marshes), all of which are very fertile. The excellence of most of the pasture, and the frequent occurrence of these handsome plains or marshes in the midst of the woods, give a pleasing character to the bush here, which is always welcome. A walk of about six miles from Victoria Valley places us on the bridge of the Dee, which is in this part a rather sluggish river, perhaps twenty yards wide, formed by the overflowings of Lake Echo.

It is at this part of the journey that we catch the first sight of the effects of the rigorous winter of 1837, a season of extraordinary severity, and which in a few weeks struck with death the forests throughout the valleys of well near all the highlands of this part of Tasmania. Here, however, it ceased its ravages, and its withering march from the westward was stayed. The storm moderated and when it reached this river it seems to have wholly died away, but not before its task was finished, its work of demolition fully completed; for the destruction of the forests of all the lowlands of this extensive district could not have been more perfectly accomplished if even a simoom had passed over them. This extraordinary season destroyed the timber of almost every valley on the vast plateau lying between this quarter and the mountains terminating at the verge of the Westbury and Norfolk Plains districts. The havoc has been indeed tremendous, but wholly incalculable.

It is impossible to witness the effects of this winter without emotion and the traveller unaccustomed to such a picture of desolation is startled at the amazing scene of ruin which now presents itself. The bush is one

interminable mass of dead trees. Except on the hill tops everything around him is dead. Whichever way he looks he sees hardly anything but dead forests, one apparently endless expanse of dead trees. The further he advances beyond the Dee, the more perfect has been the destruction. About this river, where the tempest seems to have slackened, nearly half the trees have perished, or are only now recovering the shock they received thirteen years ago. But it is around the incipient town of Marlborough that the winter seems to have put forth its full strength, for here (the hill tops always excepted) the annihilation of life is almost universal; \* for miles every tree on the lower lands had died.

A person writing of the districts I have undertaken to describe will not be accused of digressing in pausing to attempt the investigation of the cause which led to the demolition of the forests here. The subject is interesting, and that task can never be considered an unprofitable one which has for its object the exposition of the truth; and, if possible, the correction of the vague hypothesis by which some have endeavoured to account for their decay - I believe, more with the view of establishing new theories than of coming at the truth. According to some this was occasioned by disease; to others, by lightning; while another class ascribe the calamity to extensive bush fires. But these persons are either ignorant of the true cause, or they belong to that class of men who will never adopt a common-sense view of anything.

I was a traveller in these districts as long ago as 1835. At that time the trees were everywhere fresh and vigorous. In the beginning of 1838 I passed this way again, only a few months after the destruction of these forests had been effected. The ground was then covered with dead leaves,

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\* It is very extraordinary fact, that within the last year or two about four of the trees in this township have put forth leaves after an apparent suspension of vitality of ten or eleven years' duration.

(the effect of the simultaneous decay of the millions of trees which had just perished), and the bark was hanging in shreds from every bough. A most severe winter had occurred not long before, and a deep snow had fallen, which lay on the ground for many weeks, by which (the grasses excepted) vegetation on the lower lands was perfectly annihilated. The kangaroos, which swarmed here in '35, were all but extinguished; and one of a party of men who was up here then assured me that by taking advantage of the helpless condition to which the poor animals were reduced by hunger and long-continued cold, he and some others killed, in one afternoon, no less a number than sixty-seven. Judging from the quantities of their bones which I found scattered everywhere, (I am speaking of '38), they must have died by thousands.

If we did not know that the destruction of the trees took place with the occurrence of this terrible winter, an examination of the district would lead us to infer that cold was the agent, from the simple fact, that on the top of every hill and every ridge the trees never died. This is to be seen everywhere, even around Marlborough about which place the winter appears to have poured the full storm of its strength. It is not on one hill top alone that the trees are still green and vigorous but on every hill throughout the district. If, then, fire were really the agent, how came the trees to have escaped death in these situations, and that invariably? Are its effects less destructive on the hills than elsewhere? The answer of every one will be, certainly not. Again, do bush fires destroy the forests, or even seriously injure them? We see the contrary in five hundred cases every summer; and if such were the case, there ought not to be a tree left us in all Tasmania. But the notion is absurd. Moreover, the trees in these districts do not exhibit any extraordinary marks of fire as would certainly be the case had they been destroyed by it. But I believe we might as well impute the devastation to the Mosaic deluge as to either fire or disease."

*Extract from J. E. Calder.*

*"Some account of the Country between Hamilton and the Frenchmans Cap".*

*Hobart Town Courier, 21st September 1850*

APPENDIX 2The Preparation of Fossil Pollen Extracts from Late Quaternary Sediments in Tasmania.A. Equipment Used (six samples processed concurrently).

1. 12 x 15 ml. round bottom glass "MSE" centrifuge tubes (heat resistant), 0.6 inch external diameter.
2. 6 x 15 ml. plastic "MSE" centrifuge tubes, 0.6 inch external diameter.
3. 12 x "Oxoid" microbiological caps to fit glass centrifuge tubes.
4. 1 x roll of "Parafilm" (for sealing the plastic centrifuge tubes).
5. 6 x 45 ml. plastic "MSE" centrifuge tubes, 1.2 inch external diameter.
6. 1 x "MSE MINOR CENTRIFUGE" (Code No. 1265) with two heads and tube holder sets:
  - (i) a 'swing' head to hold the 0.6 inch tubes (glass tubes were found to break in a fixed angle head).
  - (ii) a fixed angle head to hold the 1.2 inch tubes.
7. 6 x plastic wash bottles for dispensing reagents.
8. microbiological glass rod 'spreaders', disposable "Pasteur" pipettes and assorted glass beakers, 50 - 500ml.
9. Glass slides and ½ inch square No. 0 to 1 size coverslips (both stored in an 100:1 Ethanol: HCl solution).
10. "Quikstik" permanent adhesive slide labels.
11. Variable heat setting hotplate.
12. Water bath and tube holders to fit both 0.6 and 1.2 inch centrifuge tubes.
13. "Beam" balance for balancing centrifuge tubes.
14. "Whirlimix" test tube stirrer.
15. "Endecott" 5 inch (or smaller) test sieves, 250, 150 and, if required, 100  $\mu$  mesh sizes, lid and collecting basin to fit.
16. Reagents (all 'A.R.' grade)
 

Hydrochloric acid	Acetic Anhydride
Hydrofluoric acid	Glycerol

Sulphuric acid

Saffranin

Glacial Acetic acid

Potassium Hydroxide

N.B. Access to either filtered de-ionized or distilled water and a well-equipped fume cupboard is essential as is the use of rubber gloves in handling most of the above reagents.

17. Make up:

- (i) 10% w/v KOH solution.
- (ii) 9:1 Acetic Anhydride: conc. Sulphuric acid solution (mixture should be made up fresh for each preparation. This "Acetolysis" mixture explodes on contact with water).
- (iii) Saffranin solution. Enough is dissolved in distilled water to give a med. rosé colour (a deep 'claret' coloured solution is too concentrated).

B. Extractive Procedures.

0.2 gm. of oven dried material is sufficient except in the case of glaci-fluvial clays. Here, up to 2 gm. may be required.

(a) Lacustrine Clays

1. test for the presence of carbonates using HCl.
2. place sediment in either a small or large plastic centrifuge tube depending on clay content. Add 10ml. HF, seal with "Parafilm" and leave overnight (beware effervescence).

(b) Clay-free Peats

break up peat gently and soak overnight in ca. 5ml. 10% KOH in a small glass centrifuge tube. Seal using "Parafilm". Any sand in the peat can then be removed by a series of decants of the KOH suspension. "Whirlimix" to break up organic matter aggregates.

3. centrifuge on setting 8 for at least 15 minutes, decant HF into fume cupboard sink and flush with water. Centrifuge for ca. 3 minutes at setting 8, decant. (residue then treated as for clays - step 5).

NB. If organic matter in the HF treated clays cannot be sedimented by centrifugation, decant HF + organic matter into large plastic centrifuge tubes and dilute extensively with distilled water. Re-centrifuge. With large amounts of clay, several repeats of the HF steps may be needed to remove the clay fraction.

4. wash residue with HCl,  
centrifuge for 5 mins.,  
decant.

5. wash residues with distilled water, centrifuge and decant (at this point, heat water bath on hotplate to ca. 80°C).

6. add 5 ml. distilled water to residue, "Whirlimix" and pour suspension onto the 'nest' of 250-150  $\mu$  sieves and collecting basin. Wash residues on each sieve with a jet of distilled water and break up any obvious organic matter aggregates with a glass stirring rod.

NB. A duplicate set of glass centrifuge tubes is convenient at this stage as the combined filtrates in the collecting basin may total greater than 10 ml., and hence overload one tube. Lacustrine clay sediments, previously treated in plastic centrifuge tubes, at this point are conveniently transferred into glass centrifuge tubes. All tubes are sealed using the "Oxoid" caps.

7. centrifuge and decant.
8. add ca. 1 ml. of Glacial Acetic acid, "Whirlimix" thoroughly and top up tube with ca. 9 ml. Glacial Acetic acid.
9. centrifuge and decant acid in fume cupboard sink.
10. add very slowly ca. 1 ml. of "Acetolysis" mixture, "Whirlimix" then add ca. 9 ml. of "Acetolysis" mixture.
11. heat centrifuge tubes at 80°C for 15 minutes, then heat water bath to boiling. Remove tubes when boiling just begins.



NB. In the writer's experience, 1 minute in a boiling water bath fails to remove cellulose in the sample. In many cases, 10 ml. of "Acetolysis" mixture is insufficient to digest the non-sporopollenin material in the sample. Division of the sample into two centrifuge tubes and treating each to 10 ml. of "Acetolysis" mixture gives better results. The residues are recombined after step 12.

12. centrifuge for 10 minutes at setting 8, decant slowly into running water in fume cupboard sink.

13. "Whirlimix" residue, add 3 ml. Glacial Acetic acid, then "Whirlimix" prior to adding another 7 ml. of Acetic acid.

14. centrifuge for 10 minutes, decant in fume cupboard sink.

15. wash residue with distilled water, centrifuge and decant.

16. add 3 ml. of 10% KOH, "Whirlimix", then add 7 ml. 10% KOH solution.

17. heat in boiling water bath for 10 - 15 minutes.

NB. Organic matter tends to flocculate in the KOH solution, but can be conveniently re-dispersed during heating using glass stirring rods.

18. centrifuge and decant.

NB. At this point cool the water bath to 80°C and place a reagent bottle containing Glycerol, and fitted with a covered stopper, in the 80°C bath.

19. "Whirlimix", wash residue with distilled water, centrifuge and decant.

20. add 2 ml. of Saffranin solution to each tube and leave for 20 minutes.

21. Top up centrifuge tubes with distilled water, centrifuge on setting 8 for 10 minutes.

22. decant and leave tubes to drain for 5 minutes under cover.

23. "Whirlimix", add 1 ml. of hot Glycerol and "Whirlimix" again thoroughly.

Add 9 ml. of hot Glycerol and heat in 80°C water bath for 10 minutes.

NB. It is important to have as much of the water drained from the residue as possible, since otherwise phase separation may occur, preventing movement of fine particle down the tube during the subsequent centrifugation. The Glycerol step is important in that it removes excess stain and, by virtue of

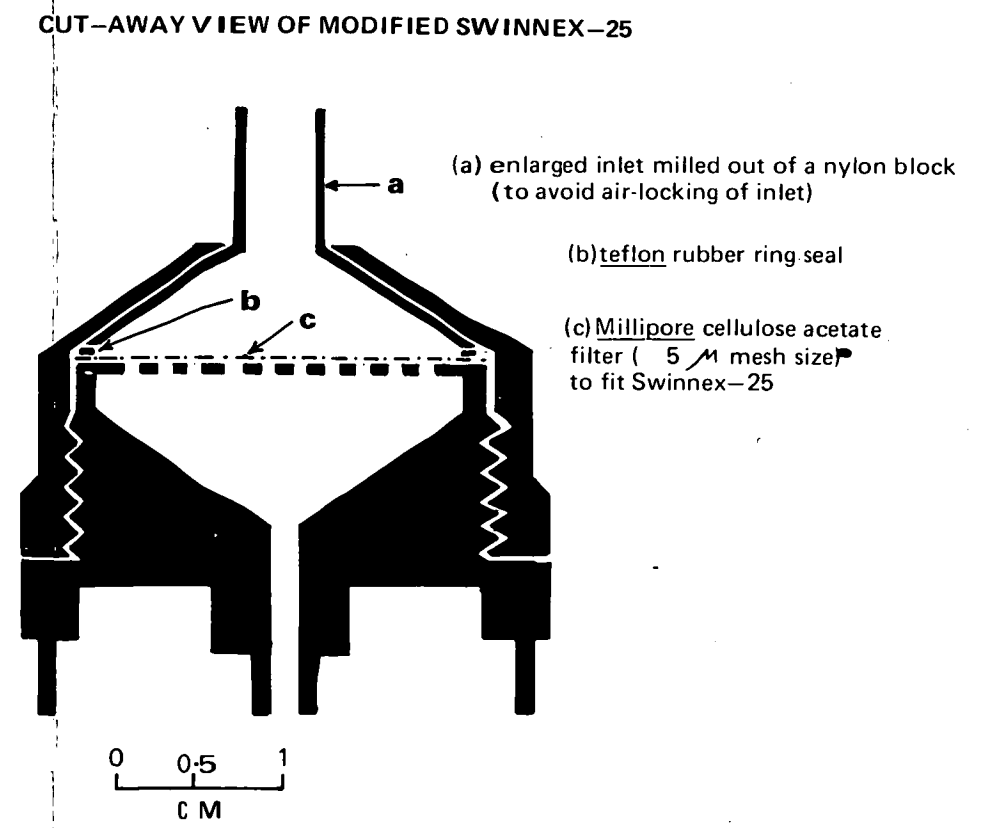
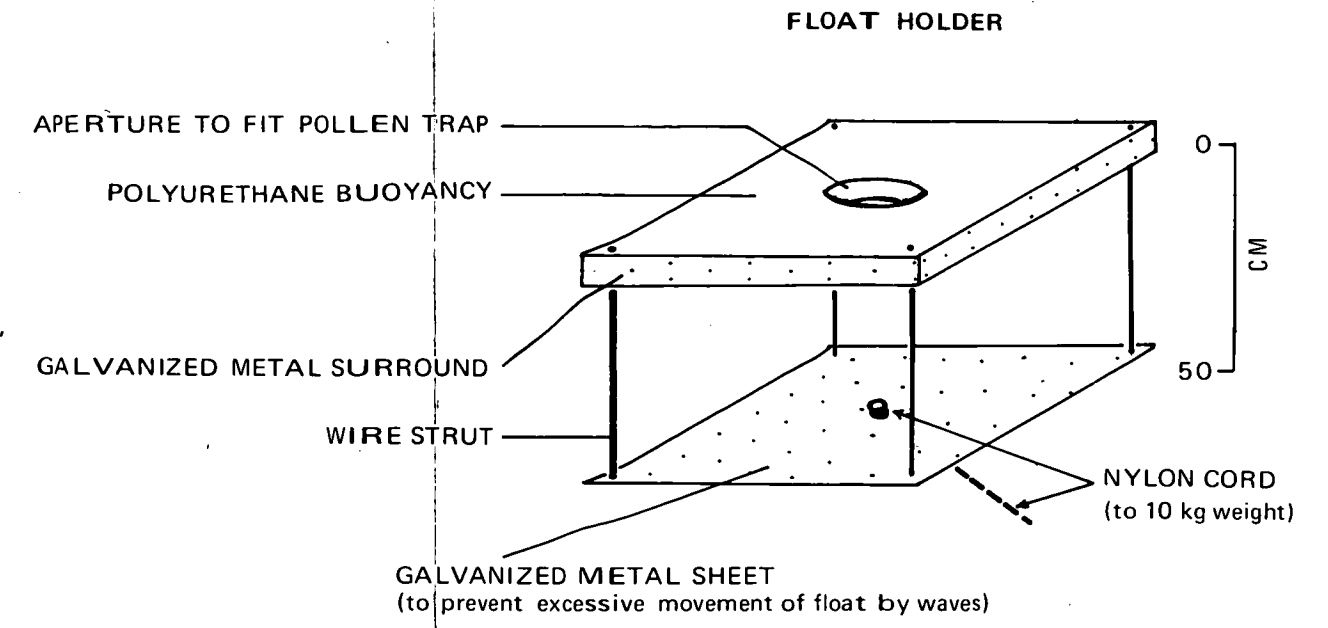
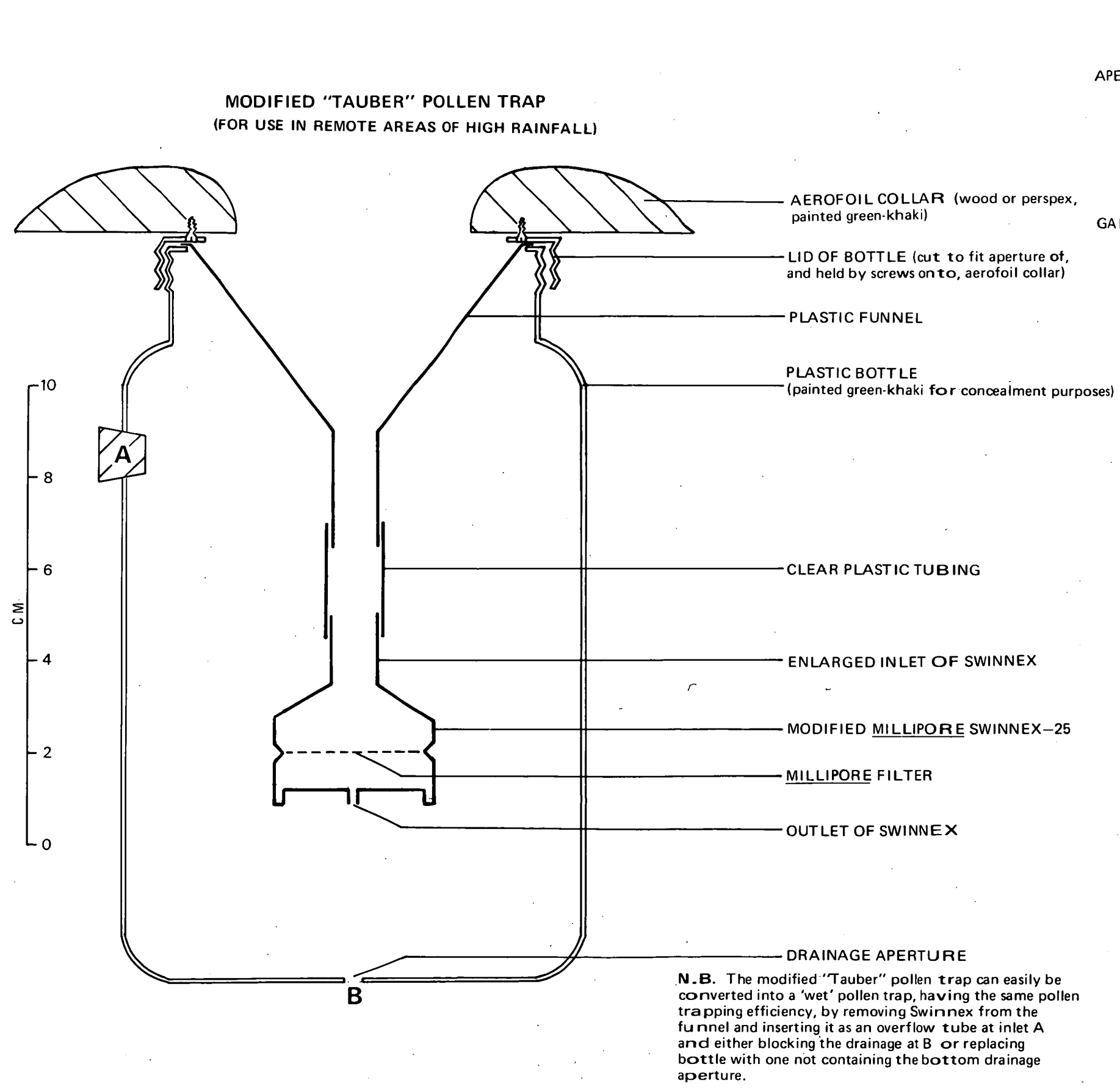
differential settling velocities of very fine particles in the cooling Glycerol during centrifugation, enables fine particles to be separated from pollen and remaining plant macrofragments. The step was found to eliminate carbon particles of diameters less than 0.5 from the residue. The centrifugate can be easily checked to see if any pollen has remained in suspension.

24. centrifuge at setting 8 for ca. 30 minutes, decant slowly and leave tubes to drain completely of Glycerol under cover.
25. add 3-20 drops of hot Glycerol to the residue depending on amount of pollen and heat centrifuge tubes in 80°C water bath. "Whirlimix" each suspension for at least 3 - 5 minutes before taking a drop, either with a glass stirring rod or "Pasteur" pipette, for mounting on a glass slide.

NB. Glass slides should be prelabelled and the suspension droplet immediately covered with a coverslip.

26. The slide is examined under a magnification of 200 X and the suspension diluted with Glycerol or concentrated by centrifugation and decanting if necessary, to produce a mount suitable for counting.
27. Suitable mounts are sealed using clear nail polish and the remainder of the suspension preserved in stoppered vials 1 ml. "Duranol" plastic vials were found to be adequate.

APPENDIX 3.



APPENDIX 4CENSUS OF THE VASCULAR FLORA IN PLANT  
COMMUNITIES LOCAL TO THE CORE SITES.

Subjectively estimated abundance of species in the local  
vegetation:

- d - dominant species.
- a - species abundant.
- c - species common.
- lc - species locally common.
- r - species of rare or occasional occurrence.

Appendix 4a: Beatties Tarn.1. LYCOPSIDA & PTERIDOPHYTA.

## LYCOPODIACEAE

*Lycopodium fastigatum* R. Br. r

*L. scariosum* Forst. f. r

*L. selago* L. (incl. *L. varium* R. Br.) r

## ISOETACEAE.

*Isoetes gunnii* A. Br. a

## GLEICHENIACEAE.

*Gleichenia circinnata* Swartz lc

## ASPIDIACEAE.

*Polystichum proliferum* (R. Br.) Presl. lc

2. GYMNOSPERMAE.

## PODOCARPACEAE.

*Phyllocladus aspleniifolius* (Labill.) Hook. f. r

## TAXODIACEAE.

*Athrotaxis cupressoides* Don r

3. ANGIOSPERMAE (Dicotyledonae)

## COMPOSITAE.

*Brachycome scapiformis* DC. r

*Celmisia longifolia* Cass lc

*Craspedia alpina* Backhouse ex Hook. f. lc

*Helichrysum antennarium* (DC.) F. Muell ex Benth. r

*H. backhousii* (Hook. f.) F. Muell. ex Benth. c

*H. hookeri* (Sond.) Druce c

*H. obcordatum* (DC.) F. Muell. ex Benth., ? r

*Olearia algida* N.A. Wakefield r

*O. ledifolia* (Hook. f.) Benth. a

*O. obcordata* (Hook. f.) Benth. r

<i>O. persoonioides</i> (DC.) Benth.	c
<i>O. pinifolia</i> (Hock. f.) Benth.	a
CUNONIACEAE.	
<i>Bauera rubioides</i> Andr.	a
DROSERACEAE.	
<i>Drosera arcturi</i> Hook.	lc
<i>D. pygmaea</i> DC.	r
ELAEOCARPACEAE.	
<i>Aristotelia peduncularis</i> (Labill.) Hook. f.	r
EPACRIDACEAE.	
<i>Archeria serpyllifolia</i> Hook. f.	lc
<i>Cyathodes dealbata</i> R. Br.	lc
<i>C. glauca</i> Labill.	c
<i>C. juniperina</i> (Forst.) Druce	a
<i>C. parvifolia</i> R. Br.	a
<i>C. petiolaris</i> (DC.) Druce	lc
<i>C. straminea</i> R. Br.	lc
<i>Epacris serpyllifolia</i> R. Br.	c
<i>Laucopogon montana</i> R. Br.	r
<i>Monotoca empetrifolia</i> R. Br.	r
<i>Pentachondra pumila</i> (Forst.) R. Br.	r
<i>Richea gunnii</i> Hook. f.	lc
<i>R. pandifolia</i> Hock. F.	r
<i>R. scoparia</i> Hook. f.	lc
<i>R. sprengeloides</i> (R. Br.) F. Muell.	lc
<i>Sprengelia incarnata</i> Sm.	c
<i>Trochocarpa cunninghamii</i> (DC.) W.M. Curtis	r
<i>T. disticha</i> (R. Br.) Spreng.	r
<i>T. thymifolia</i> (R. Br.) Spreng.	a

## ERICACEAE.

*Gaultheria hispida* R. Br.

c

## ESCALLONIACEAE.

*Tetracarpaea tasmanica* Hook. f.

lc

## FAGACEAE.

*Nothofagus cunninghamii* (Hook.) Oerst.

r

## GENTIANACEAE.

*Gentianella diemensis* (Grieseb.) J. H. Willis

r

## GERANIACEAE.

*Geranium microphyllum* Hook. f.

c

## GOODENIACEAE.

*Scaevola hookeri* (de Vriese) Hook. f.

r

## HALORAGACEAE.

*Haloragis serpyllifolia* (Hook. f.) Walp.

lc

*Myriophyllum propinquum* A. Cunn.

r

## LENTIBULARIACEAE.

*Utricularia dichotoma* Labill.

r

*U. monanthos* Hook. f.

r

## MYRTACEAE.

*Baeckea gunniana* Schau.

lc

*Eucalyptus coccifera* Hook. f.

d

*E. johnstonii* Maiden

c

*Leptospermum humifusum* A. Cunn. ex Schau.

c

*L. lanigerum* Sm.

lc

*Melaleuca squamea*

lc

## ONAGRACEAE.

*Epilobium* sp.

r

## OXALIDACEAE.

*Oxalis lactea* Hook.

lc

## PROTEACEAE.

<i>Banksia marginata</i> Cav.	c
<i>Bellenden montana</i> R. Br.	r
<i>Hakea lissosperma</i> R. Br.	a
<i>Lomatia polymorpha</i> R. Br.	r
<i>Persoonia gunnii</i> Hook. f.	r
<i>Orites acicularis</i> R. Br.	lc
<i>O. revoluta</i> R. Br.	lc
<i>O. diversifolia</i> R. Br.	a
<i>Telopea truncata</i> (Labill.) R. Br.	c

## RANUNCULACEAE.

<i>Ranunculus nanus</i> Hook.	r
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## ROSACEAE.

<i>Rubus gunnianus</i> Hook.	r
<i>Acaena anserina</i> (J.G. & G. Forst.) Druce	c

## RUBIACEAE.

<i>Coprosma nitida</i> Hook. f.	c
<i>Galium cilare</i> Hook. f.	r

## RUTACEAE.

<i>Boronia citriodora</i> Gunn. ex Hook. f.	r
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## SANTALACEAE.

<i>Exocarpos humifusus</i> R. Br.	c
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## SCROPHULARIACEAE.

<i>Euphrasia striata</i> R. Br.	r
<i>Ourisia integrifolia</i> R. Br.	r

## THYMELAEACEAE.

<i>Pimelea sericea</i> R. Br.	r
<i>P. nivea</i> Labill.	c

## VIOLACEAE.

<i>Viola hederacea</i> Labill.	c
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## WINTERACEAE.

*Drimys lanceolata* (Poir.) Baill. a

4. ANGIOSPERMAE (Monocotyledonae)

## CENTROLEPIDACEAE.

*Centrolepis* spp. c

## CYPERACEAE.

*Calorophus lateriflorus* (R. Br.) F. Muell. lc

*Carex gaudichaudiana* Kunth. r

*C. gunniana* Boott. r

*Carpha alpina* R. Br. lc

*Lepidosperma filiforme* Labill. lc

*Schoenus* sp. c

*Scirpus* sp. c

*Uncinia* sp. lc

## GRAMINEAE.

*Danthonia* sp. r

*Deyeuxia* sp. r

*Hierochloa* sp. r

*Poa* spp. r

## LILIACEAE.

*Astelia alpina* R. Br. c

*Diplarrhena morea* Labill. r

*Dianella tasmanica* Hook. f. r

## RESTIONACEAE.

*Restio australis* R. Br. c

*R. oligocephalus* F. Muell. c

Appendix 4b: Eagle Tarn.1. LYCOPSIDA & PTERIDOPHYTA

## LYCOPODIACEAE.

*Lycopodium scariosum* Forst. f. r

## ISOETACEAE.

*Isoetes gunnii* A. Br. r

## GLEICHENIACEAE.

*Gleichenia circinnata* Swartz c

## ASPIDACEAE.

*Polystichum proliferum* (R. Br.) Presl. lc

2. GYMNOSPERMAE.

## PODOCARPACEAE.

*Microstrobos niphophilus* Garden & Johnson lc

## TAXODIACEAE

*Athrotaxis cupressoides* Don lc

*A. selaginoides* Don r

3. ANGIOSPERMAE (Dicotyledonae)

## COMPOSITAE.

*Brachycome scapiformis* DC. r

*Celmisia longifolia* Cass r

*Helichrysum backhousii* (Hook. f.) F. Muell. ex. Benth lc

*H. hookeri* (Sond.) Druce lc

*H. ledifolium* (DC.) Benth lc

*Olearia ledifolia* (Hook. f.) Benth. lc

## CUNONIACEAE.

*Bauera rubioides* Andr. a

## DROSERACEAE.

*Drosera arcturi* Hook. r

*D. pygmaea* DC. r

## ELAEOCARPACEAE.

*Aristotelia peduncularis* (Labill.) Hook. f. r

## EPACRIDACEAE.

*Cyathodes dealbata* R. Br. r

*C. glauca* Labill. c

*C. juniperina* (Forst.) Druce c

*C. parvifolia* R. Br. c

*C. straminea* R. Br. lc

*Epacris serpyllifolia* R. Br. a

*Monotoca empetrifolia* R. Br. r

*Pentachondra pumila* (Forst.) R. Br. r

*Richea gunnii* Hook. f. lc

*R. pandanifolia* Hook. f. lc

*R. scoparia* Hook. f. c

*R. sprengeloides* (R. Br.) F. Muell. c

*Sprengelia incarnata* Sm. c

*Trochocarpa cunninghamii* (DC.) W.M. Curtis lc

## ERICACEAE.

*Gaultheria hispida* R. Br. lc

## ESCALLONIACEAE.

*Tetracarpaea tasmanica* Hook. f. r

## FAGACEAE.

*Nothofagus cunninghamii* (Hook.) Oerst. lc

*N. gunnii* (Hook. f.) Oerst. r

## GENTIANACEAE.

*Gentianella diemensis* (Grieseb.) J.H. Willis r

## GERANIACEAE.

*Geranium microphyllum* Hook. f. c

## HALORAGACEAE.

*Haloragis serpyllifolia* (Hook. f.) Walp. lc

*Myriophyllum propinquum* A. Cunn.

r

# LOGANIACEAE.

*Mitrasacme archeri* Hook. f.

r

# MYRTACEAE.

*Baeckea gunniana* Schau.

lc

*Eucalyptus coccifera* Hook. f.

d

*E. johnstonii* Maiden

a

*Leptospermum humifusum* A. Cunn. ex Schau.

lc

*L. lanigerum* Sm.

a

*Melaleuca squamea* Labill.

lc

# OXALIDACEAE.

*Oxalis lactea* Hook.

lc

# POTAMOGETONACEAE.

*Potamogeton* sp.

lc

# PROTEACEAE.

*Banksia marginata* Cav.

lc

*Bellendena montana* R. Br.

lc

*Hakea lissosperma* R. Br.

a

*Persoonia gunnii* Hook. f.

lc

*Orites acicularis* R. Br.

lc

*Orites diversifolia* R. Br.

a

*O. revoluta* R. Br.

c

*Telopea truncata* (Labill.) R. Br.

c

# RANUNCULACEAE.

*Ranunculus nanus* Hook.

r

# ROSACEAE.

*Acaena anserinifolia* (J.R. & G. Forst.) Druce

lc

# RUBIACEAE.

*Coprosma nitida* Hook. f.

a

*Galium cilare* Hook. f.

r

## RUTACEAE.

*Boronia citriodora* Gunn ex Hook. f. r

## SANTALACEAE.

*Exocarpos humifusus* R. Br. lc

## SCROPHULARIACEAE.

*Euphrasia striata* R. Br. r

## THYMELAEACEAE.

*Pimelea nivea* Labill. lc

## VIOLACEAE.

*Viola hederacea* Labill. lc

## WINTERACEAE.

*Drimys lanceolata* (Poir.) Baill. a

4. ANGIOSPERMAE (Monocotyledonae)

## CENTROLEPIDACEAE.

*Centrolepis* sp. lc

## CYPERACEAE.

*Calorophus lateriflorus* (R. Br.) F. Muell. lc

*Carex* sp. r

*Carpha alpina* R. Br. c

*Gahnia psittacorum* Ewart r

*Gymnoschoenus sphaerocephalus* (R. Br.) Hook. f. r

*Lepidosperma filiforme* Labill. r

*Oreobolus* sp. lc

*Schoenus* sp. lc

*Scirpus* sp. lc

## GRAMINEAE.

*Poa* spp. r

## LILIACEAE.

*Astelia alpina* R. Br. c

*Dianella tasmanica* Hook. f. r

Diplarrhena morea Labill.

lc

RESTIONACEAE.

Restio australis R. Br.

c

R. complanatus R. Br.

lc

R. tetraphyllus Labill.

lc

XYRIDACEAE.

Xyris operculata Labill.

r

Appendix 4c: The Tarn Shelf.1. LYCOPSIDA & PTERIDOPHYTA

## LYCOPODIACEAE.

<i>Lycopodium fastigatum</i> R. Br.	r
<i>L. scariosum</i> Forst.	lc
<i>L. selago</i> L. (incl. <i>L. varium</i> R. Br.)	lc

## ISOETACEAE.

<i>Isoetes gunnii</i> A. Br.	c
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## GLEICHENIACEAE.

<i>Gleichenia circinnata</i> Swartz	r
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## BLECHNACEAE.

<i>Blechnum penna-marina</i> (Poir.) Kuhn	r
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2. GYMNOSPERMAE.

## CUPRESSACEAE.

<i>Diselma archeri</i> Hook. f.	d
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## PODOCARPACEAE.

<i>Microcachrys tetragona</i> (Hook.) Hook. f.	a
<i>Microstrobos niphophilus</i> Garden and Johnson	d
<i>Podocarpus alpina</i> Hook. f. (incl. <i>P. lawrencii</i> Hook.f.)	c

## TAXOCIACEAE.

<i>Athrotaxis cupressoides</i> Don	d
<i>A. laxifolia</i> Hook.	r
<i>A. selaginoides</i> Don	r

3. ANGIOSPERMAE (Dicotyledonae)

## COMPOSITAE.

<i>Abrotanella forsterioides</i> (Hook. f.) Benth.	lc
<i>Brachycome scapiformis</i> DC.	r
<i>Celmisia longifolia</i> Cass.	c

<i>C. saxifraga</i> Comber, ?	r
<i>Ewartia meridithae</i> (F. Muell.) Beauv.	c
<i>Helichrysum backhousii</i> (Hook. f.) F. Muell. ex Benth.	c
<i>H. hookerii</i> (Sond.) Druce	c
<i>H. ledifolium</i> (DC.) Benth.	a
<i>Olearia ledifolia</i> (Hook. f.) Benth.	a
<i>Pterygopappus lawrencii</i> Hook. f.	lc
<i>Senecio pectinatus</i> DC.	r
CRUCIFERAE.	
<i>Cheesemannia radicata</i> (Hook. f.) O. E. Schultz	r
CUNONIACEAE.	
<i>Bauera rubioides</i> Andr.	lc
DONATIACEAE.	
<i>Donatia novae-zelandiae</i> J.R. & G. Forst.	r
DROSERACEAE.	
<i>Drosera arcturi</i> Hook.	lc
<i>D. pygmaea</i> DC.	r
EPACRIDACEAE.	
<i>Archeria serpyllifolia</i> Hook. f.	lc
<i>Cyathodes dealbata</i> R. Br.	c
<i>C. petiolaris</i> (DC.) Druce	c
<i>Dracophyllum milliganii</i> Hook. f.	lc
<i>D. minimum</i> F. Muell.	r
<i>Epacris serpyllifolia</i> R. Br.	d
<i>Monotoca empetrifolia</i> R. Br.	lc
<i>Pentachondra pumila</i> (Forst.) R. Br.	c
<i>Richae gunnii</i> Hook. f.	c
<i>R. Pandifolia</i> Hook. f.	lc
<i>R. scoparia</i> Hook. f.	a
<i>R. sprengeloides</i> (R. Br.) F. Muell.	c



<i>Sprengelia incarnata</i> Sm.	r
<i>Trochocarpa thymifolia</i> Hook. f.	r
FAGACEAE.	
<i>Nothofagus gunnii</i> (Hook. f.) Oerst.	lc
GENTIANACEAE.	
<i>Gentianella diemensis</i> (Grieseb.) J.H. Willis	c
HALORAGACEAE.	
<i>Haloragis serpyllifolia</i> (Hook. f.) Walp.	lc
<i>Myriophyllum propinquum</i> A. Cunn.	r
LOGANIACEAE.	
<i>Mitrasacme archeri</i> Hook. f.	r
MYRTACEAE.	
<i>Leptospermum humifusum</i> A. Cunn. ex Schau.	c
PLANTAGINACEAE.	
<i>Plantago muelleri</i> Pilger	lc
PROTEACEAE.	
<i>Bellendenia montana</i> R. Br.	c
<i>Orites acicularis</i> R. Br.	a
<i>O. revoluta</i> R. Br.	a
<i>Persoonia gunnii</i> Hook. f.	c
RANUNCULACEAE.	
<i>Caltha phylloptera</i> A.W. Hill	lc
<i>Ranunculus nanus</i> Hook	r
ROSACEAE.	
<i>Rubus gunnianus</i> Hook.	lc
<i>Acaena anserinifolia</i> (J.R. & G. Forst.) Druce	c
<i>A. montana</i> Hook. f.	c
RUBIACEAE.	
<i>Coprosma nitida</i> Hook. f.	c

## SANTALACEAE.

Exocarpos humifusus R. Br.

c

## SCROPHULARIACEAE.

Euphrasia striata R. Br.

r

Ourisia integrifolia R. Br.

r

## THYMELAEACEAE.

Pimelea sericea R. Br.

r

## UMBELLIFERAE.

Diplaspis hydrocotyle Hook. f.,?

r

## WINTERACEAE.

Drimys lanceolata (Poir.) Baill.

a

4. ANGIOSPERMAE (Monocotyledonae).

## CENTROLEPIDACEAE.

Centrolepis sp.

a

Trithuria submersa Hook. f.

lc

## CYPERACEAE.

Calorophus lateriflorus (R. Br.) F. Muell.

c

Carpha alpina R. Br.

c

Oreobolus distichus F. Muell.

c

O. pumilo R. Br.

c

Scirpus sp.

r

Uncinia sp.

c

## GRAMINEAE.

Danthonia sp.

r

Hierochloe sp.

r

Poa australis (spp. agg.) (R. Br.) J.H. Willis

lc

## LILIACEAE.

Astelia alpina R. Br.

a

Milligania densiflora Hook.

c

## RESTIONACEAE.

Restio australis R. Br.

lc

Appendix 4d : Lake Vera Catchment Area.

(incomplete regarding rare species)

1. BRYOPHYTA

## SPHAGNACEAE.

Sphagnum sp.

lc

2. LYCOPSIDA & PTERIDOPHYTA

## BLECHNACEAE.

Blechnum procerum (Forst.)

c

Blechnum sp.

c

## DENNSTAEDTIACEAE.

Histriopteris incisa (Thunb.) J. Sm.

r

## GLEICHENIACEAE.

Gleichenia circinnata Schartz

c

## ISOETACEAE.

Isoetes gunnii A. Br.

r

3. GYMNOSPERMAE.

## PODOCARPACEAE.

Dacrydium franklinii Hook. f.

lc

Phyllocladus aspleniifolius (Labill.) Hook. f.

r

## TAXOCIACEAE.

Athrotaxis selaginoides Don

lc

4. ANGIOSPERMAE (Dicotyledonae)

## COMPOSITAE.

Erigeron sp.

r

## CUNONIACEAE.

Bauera rubioides Andr.

c

Anodopetalum biglandulosum A. Cunn. ex Hook. f.

c

## DROSERACEAE.

*Drosera arcturi* Hook. r

## ELAEOCARPACEAE.

*Aristotelia peduncularis* (Labill.) Hook. f. r

## EPACRIDACEAE.

*Archeria eriocarpa* Hook. f. lc

*A. hirtella* (Hook. f.) Hook. f. r

*Cyathodes juniperina* (Forst.) Druce lc

*Cyathodes* sp.

*Epacris heteromema* Labill. lc

*Epacris impressa* Labill. r

*E. serpyllifolia* R. Br. c

*Monotoca glauca* (Labill.) Druce lc

*M. scoparia* var. *submutica* (Sm.) R. Br. r

*Prionotes cerinthoides* (Labill.) R. Br. lc

*Richea milliganii* (Hook. f.) F. Muell. r

*R. pandanifolia* Hook. f. lc

*R. scoparia* Hook. f. lc

*Sprengelia incarnata* Sm. lc

*Trochocarpa cunninghamii* (DC.) W.M. Curtis lc

*T. gunnii* (Hook. f.) Benth. r

## ESCALLONIACEAE.

*Anopterus glandulosus* Labill. c

## EUCRYPHIACEAE.

*Eucryphia lucida* (Labill.) Baill. a

*E. milliganii* Hook. f. lc

## FAGACEAE.

*Nothofagus cunninghamii* (Hook.) Oerst. d

## MIMOSACEAE.

*Acacia mucronata* Willd. c

## MONIMIACEAE.

<i>Atherosperma moschatum</i> Labill.	a
MYRTACEAE.	
<i>Callistemon</i> sp.	lc
<i>Eucalyptus simmondsii</i> Maiden	d
<i>E. vernicosa</i> Hook. f.	r
<i>Leptospermum lanigerum</i> Sm.	lc
<i>L. nitidum</i> Hook. f.	lc
<i>L. sericeum</i> Labill.	lc
<i>L. scoparium</i> Forst.	lc
PAPILIONACEAE..	
<i>Pultenaea juniperina</i> Labill.	lc
<i>Oxylobium ellipticum</i> R. Br.	lc
PITTOSPORACEAE.	
<i>Pittosporum bicolor</i> Hook.	r
PROTEACEAE.	
<i>Agastachys odorata</i> R. Br.	c
<i>Banksia marginata</i> Cav.	lc
<i>Bellenden montana</i> R. Br.	r
<i>Cenarrhenes nitida</i> Labill.	r
<i>Hakea epiglottis</i> Labill.	lc
<i>Lomatia polymorpha</i> R. Br.	r
<i>Orites diversifolia</i> R. Br.	c
<i>O. milliganii</i> Meisn. in Hook.	r
<i>Telopea truncata</i> (Labill.) R. Br.	lc
ROSACEAE.	
<i>Rubus gunnianus</i> Hook.	r
RUBIACEAE.	
<i>Coprosma nitida</i> Hook. f.	c
SCROPHULARIACEAE.	
<i>Euphrasia</i> sp.	r

## THYMELAEACEAE.

*Pimelia drupacea* (Labill.) c

5. ANGIOSPERMAE (Monocotyledonae)

## CYPERACEAE.

*Cladium glomeratum* R. Br. lc

*Gahnia psittacorum* Ewart lc

*Gymnoschoenus sphaerocephalus* (R. Br.) Hook. f. lc

*Lepidosperma* sp. lc

## LILIACEAE.

*Astelia alpina* R. Br. r

*Diplarrhena morea* Labill. lc

## RESTIONACEAE.

*Hypolaena longissima* Benth. lc

*Restio australis* R. Br. lc

*R. complanatus* R. Br. lc

*R. tetraphyllus* Labill. lc

## XYRIDACEAE.

*Xyris operculata* Labill. lc

Appendix 4e: Southeastern Cirque, Adamsons Peak<sup>1</sup>.1. LYCOPSIDA & PTERIDOPHYTA.

## LYCOPODIACEAE.

*Lycopodium fastigatum* R. Br. r

*L. scariosum* Forst. f. r

## GLEICHENIACEAE.

*Gleichenia circinnata* Swartz c

## 2. GYMNOSPERMAE.

## PODOCARPACEAE.

*Microcachrys tetragona* (Hook.) Hook. f. r

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1. Census of plants probably incomplete due to loss of field notes.

*Podocarpus alpina* Hook. f. (incl. *P. lawrencii* Hook. f.) r

3. ANGIOSPERMAE (Dicotyledonae).

COMPOSITAE.

<i>Brachycome</i> sp.	r
<i>Celmisia longifolia</i> Cass	lc
<i>Ewartia meridithae</i> (F. Muell.) Beauv.	r
<i>Helichrysum ledifolium</i> (Sond.) Druce	lc
<i>H. obcordatum</i> (DC.) F. Muell. ex Benth.	lc
<i>Olearia ledifolia</i> (Hook. f.) Benth.	lc
<i>Pterygopappus lawrencii</i> Hook. f.	r
<i>Senecio papillosus</i> F. Muell.	r

CUNONIACEAE.

<i>Bauera rubioides</i> Andr.	lc
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DONATIACEAE.

<i>Donatia novae-zelandiae</i> J.R. & G. Forst.	r
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DROSERACEAE.

<i>Drosera arcturi</i> Hook.	lc
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EPACRIDACEAE.

<i>Cyathodes juniperina</i> (Forst.) Druce	r
<i>C. parvifolia</i> R. Br.	lc
<i>Drachophyllum milliganii</i> Hook. f.	lc
<i>Epacris gunnii</i> Hook. f.	lc
<i>E. serpyllifolia</i> R. Br.	lc
<i>Monotoca empetrifolia</i> R. Br.,?	
<i>Pentachondra pumila</i> (Forst.) R. Br.	lc
<i>Richea milliganii</i> (Hook. f.) F. Muell.	lc
<i>R. pandanifolia</i> Hook. f.	lc
<i>R. scoparia</i> Hook. f.	a
<i>R. sprengeloides</i> R. Br.	c
<i>Sprengelia incarnata</i> Sm.	c

Trochocarpa thymifolia (R. Br.) Spreng.	r
ERICACEAE.	
Gaultheria hispida R. Br.	r
EUCRYPHIACEAE.	
Eucryphia milliganii Hook. f.	c
FAGACEAE.	
Nothofagus cunninghamii (Hook. ) Oerst.	c
N. gunnii (Hook. f.) Oerst,?	r
GENTIANACEAE.	
Gentianella diemensis (Grieseb.) J.H. Willis	r
GERANIACEAE.	
Geranium microphyllum Hook. f.	r
LOGANIACEAE.	
Mitrasacme archeri Hook. f.	r
MYRTACEAE.	
Baeckea gunnianus Schau.	lc
Eucalyptus coccifera Hook. f.	lc
E. vernicosa Hook. f., ?	
PLANTAGINACEAE.	
Plantago tasmanica Hook. f.	lc
P. muelleri Pilger	r
PROTEACEAE.	
Bellenden montana R. Br.	c
Orites acicularis R. Br.	c
O. diversifolia R. Br.	lc
O. revoluta R. Br.	
Persoonia gunnii Hook. f.	lc
Telopea truncata (Labill.) R. Br.	lc
ROSACEAE.	
Geum renifolium F. Muell.	r



Rubus gunnianus Hook.	r
RUBIACEAE.	
Coprosma nitida Hook. f.	c
SANTALACEAE.	
Exocarpos humifusus R. Br.	lc
SCROPHULARIACEAE.	
Euphrasia sp.	lc
STYLIDIACEAE.	
Stylidium graminifolium Swartz	r
VIOLACEAE.	
Viola hederacea Labill.	r
WINTERACEAE.	
Drimys lanceolata (Poir.) Baill.	c
4. <u>ANGIOSPERMAE</u> (Monocotyledonae)	
CENTROLEPIDACEAE	
Centrolepis sp.	lc
CYPERACEAE.	
Calorophus lateriflorus (R. Br.) F. Muell.	lc
Carpha alpina R. Br.	c
Oreobolus spp.	a
Scirpus sp.	c
Uncinia sp.	lc
GRAMINEAE.	
Microlaena tasmanica var. alpina Rod.	r
Poa sp.	r
LILIACEAE.	
Astelia alpina R. Br.	a
Diplarrhena morea Labill.	lc
Milligania sp.	lc

## RESTIONACEAE.

Hypolaena sp.

r

Restio australis R. Br.

a

Restio oligocephalus F. Muell.

c

## APPENDIX 5

Chenopodiaceae and Amaranthaceae spp. occurring inland are : -

Ptilotus spathulatus, occasional in dry (predominantly rainshadow) areas throughout the State.

Alternanthera denticulata, local in damp ground in the midlands and north of the State. Pollen of this species is 'fenestrate' and readily distinguishable from all other Chenopodiaceae and Amaranthaceae spp.

Rhagodia nutans, found inland, but from herbarium records occurs overwhelmingly near the coast.

Chenopodium glaucum ssp ambiguum, one herbarium record of an occurrence at Lake Dulverton ("midlands"), possibly overlooked around other inland lakes or possibly introduced by pastoral activities in the region.

With reference to the occurrence of Chenopodiaceae and Amaranthaceae spp. around inland lakes, a surface sample from a saline lake at Tunbridge (northern midlands) (salinity 2.5 - 5% R.T. Buckney per. comm.) was analysed. This modern pollen assemblage was dominated by pollen from the saltwater hydrophyte Ruppia. Pollen from Gramineae and cf. Wilsonia (a salt-marsh taxon) were abundant along with a minor component of pastoral genera, Rumex, Taraxacum - Microseris and Plantago lanceolata and Eucalyptus. One Chenopodiaceae pollen was encountered.

# ERRATA

Fig. 37 - read Spyridium for Sprydium.

Fig. 38 - read Spore (indet. 'origin) for Spore (indet. organ).

Fig. 44 - read Ophioglossales for Ophioglosales.

Fig. 54 - read Athrotaxis for Atrotaxis.

Fig. 55 - read Cynoglossum for Cyanoglossum.

Histiopteris and Lycopodium scariosum are consistently mis-spelt Histreopteris and Lycopodium scariosium respectively in the pollen diagrams, Figs. 35, 38, 40, 50 and 55. The correction of these and possibly other undetected mistakes is not possible due to the high cost of photographically reproducing the diagrams (for the third time!).

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Two supporting papers have been removed for copyright or propriety reasons.

The papers are:

New deglaciation dates from Tasmania, 1975, *Search*, vol. 6/4 pp 127-130

Late Pleistocene environments in Tasmania, 1975, *Search*, vol 6/7, pp295-300